

Release notes for ENDF/B Development n-031_Ga_071
evaluation

ENDF
B-VII.dev

April 26, 2017

- checkr Warnings:

1. A previous error halted parsing of the current section
MAT=3131, MF= 1, MT=451 (1): Parsing stopped

```
ERROR(S) FOUND IN MAT=3131, MF= 1, MT=451
SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      92 TO      140
```

- checkr Errors:

1. A variable is outside the allowed ENDF range
MAT=3131, MF= 1, MT=451 (0): Variable range

```
ERROR(S) FOUND IN MAT=3131, MF= 1, MT=451
MOD =      1 OUT OF RANGE      0 -      0      RECORD NUMBER      92
```

2. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 2, MT=151 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=3131, MF= 2, MT=151
SECTION 2/151 NOT IN DIRECTORY      RECORD NUMBER      142
```

3. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 1 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 1
SECTION 3/ 1 NOT IN DIRECTORY      RECORD NUMBER      180
```

4. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 2 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 2
SECTION 3/ 2 NOT IN DIRECTORY      RECORD NUMBER      204
```

5. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 4 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 4
SECTION 3/ 4 NOT IN DIRECTORY      RECORD NUMBER      228
```

6. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 16 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 16
SECTION 3/ 16 NOT IN DIRECTORY      RECORD NUMBER      249
```

7. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 17 (0): Directory (b)

ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 17
SECTION 3/ 17 NOT IN DIRECTORY RECORD NUMBER 258

8. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 22 (0): Directory (b)

ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 22
SECTION 3/ 22 NOT IN DIRECTORY RECORD NUMBER 264

9. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 28 (0): Directory (b)

ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 28
SECTION 3/ 28 NOT IN DIRECTORY RECORD NUMBER 273

10. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 51 (0): Directory (b)

ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 51
SECTION 3/ 51 NOT IN DIRECTORY RECORD NUMBER 283

11. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 52 (0): Directory (b)

ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 52
SECTION 3/ 52 NOT IN DIRECTORY RECORD NUMBER 304

12. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 53 (0): Directory (b)

ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 53
SECTION 3/ 53 NOT IN DIRECTORY RECORD NUMBER 324

13. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 54 (0): Directory (b)

ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 54
SECTION 3/ 54 NOT IN DIRECTORY RECORD NUMBER 344

14. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 55 (0): Directory (b)

ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 55
SECTION 3/ 55 NOT IN DIRECTORY RECORD NUMBER 363

15. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 56 (0): Directory (b)

- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 56 | RECORD NUMBER | 381 |
| SECTION 3/ 56 NOT IN DIRECTORY | | |
16. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 57 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 57 | RECORD NUMBER | 399 |
| SECTION 3/ 57 NOT IN DIRECTORY | | |
17. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 58 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 58 | RECORD NUMBER | 417 |
| SECTION 3/ 58 NOT IN DIRECTORY | | |
18. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 59 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 59 | RECORD NUMBER | 434 |
| SECTION 3/ 59 NOT IN DIRECTORY | | |
19. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 60 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 60 | RECORD NUMBER | 450 |
| SECTION 3/ 60 NOT IN DIRECTORY | | |
20. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT= 91 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=3131, MF= 3, MT= 91 | RECORD NUMBER | 466 |
| SECTION 3/ 91 NOT IN DIRECTORY | | |
21. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT=102 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=3131, MF= 3, MT=102 | RECORD NUMBER | 482 |
| SECTION 3/102 NOT IN DIRECTORY | | |
22. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT=103 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=3131, MF= 3, MT=103 | RECORD NUMBER | 506 |
| SECTION 3/103 NOT IN DIRECTORY | | |
23. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT=104 (0): Directory (b)

- | | | | |
|--|---|---------------|-----|
| | ERROR(S) FOUND IN MAT=3131, MF= 3, MT=104 | | |
| | SECTION 3/104 NOT IN DIRECTORY | RECORD NUMBER | 521 |
24. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT=105 (0): Directory (b)
- | | | | |
|--|---|---------------|-----|
| | ERROR(S) FOUND IN MAT=3131, MF= 3, MT=105 | | |
| | SECTION 3/105 NOT IN DIRECTORY | RECORD NUMBER | 532 |
25. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT=106 (0): Directory (b)
- | | | | |
|--|---|---------------|-----|
| | ERROR(S) FOUND IN MAT=3131, MF= 3, MT=106 | | |
| | SECTION 3/106 NOT IN DIRECTORY | RECORD NUMBER | 541 |
26. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT=107 (0): Directory (b)
- | | | | |
|--|---|---------------|-----|
| | ERROR(S) FOUND IN MAT=3131, MF= 3, MT=107 | | |
| | SECTION 3/107 NOT IN DIRECTORY | RECORD NUMBER | 547 |
27. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 3, MT=111 (0): Directory (b)
- | | | | |
|--|---|---------------|-----|
| | ERROR(S) FOUND IN MAT=3131, MF= 3, MT=111 | | |
| | SECTION 3/111 NOT IN DIRECTORY | RECORD NUMBER | 562 |
28. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 4, MT= 2 (0): Directory (b)
- | | | | |
|--|--|---------------|-----|
| | ERROR(S) FOUND IN MAT=3131, MF= 4, MT= 2 | | |
| | SECTION 4/ 2 NOT IN DIRECTORY | RECORD NUMBER | 568 |
29. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 4, MT= 16 (0): Directory (b)
- | | | | |
|--|---|---------------|-----|
| | ERROR(S) FOUND IN MAT=3131, MF= 4, MT= 16 | | |
| | SECTION 4/ 16 NOT IN DIRECTORY | RECORD NUMBER | 769 |
30. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 4, MT= 17 (0): Directory (b)
- | | | | |
|--|---|---------------|-----|
| | ERROR(S) FOUND IN MAT=3131, MF= 4, MT= 17 | | |
| | SECTION 4/ 17 NOT IN DIRECTORY | RECORD NUMBER | 804 |
31. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 4, MT= 22 (0): Directory (b)

- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=3131, MF= 4, MT= 22 | RECORD NUMBER | 817 |
| SECTION 4/ 22 NOT IN DIRECTORY | | |
32. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 4, MT= 28 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=3131, MF= 4, MT= 28 | RECORD NUMBER | 852 |
| SECTION 4/ 28 NOT IN DIRECTORY | | |
33. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 4, MT= 51 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=3131, MF= 4, MT= 51 | RECORD NUMBER | 891 |
| SECTION 4/ 51 NOT IN DIRECTORY | | |
34. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 4, MT= 52 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=3131, MF= 4, MT= 52 | RECORD NUMBER | 1138 |
| SECTION 4/ 52 NOT IN DIRECTORY | | |
35. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 4, MT= 53 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=3131, MF= 4, MT= 53 | RECORD NUMBER | 1377 |
| SECTION 4/ 53 NOT IN DIRECTORY | | |
36. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 4, MT= 54 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=3131, MF= 4, MT= 54 | RECORD NUMBER | 1476 |
| SECTION 4/ 54 NOT IN DIRECTORY | | |
37. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 4, MT= 55 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=3131, MF= 4, MT= 55 | RECORD NUMBER | 1567 |
| SECTION 4/ 55 NOT IN DIRECTORY | | |
38. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 4, MT= 56 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=3131, MF= 4, MT= 56 | RECORD NUMBER | 1779 |
| SECTION 4/ 56 NOT IN DIRECTORY | | |
39. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 4, MT= 57 (0): Directory (b)

- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=3131, MF= 4, MT= 57 | RECORD NUMBER | 1986 |
| SECTION 4/ 57 NOT IN DIRECTORY | | |
40. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 4, MT= 58 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=3131, MF= 4, MT= 58 | RECORD NUMBER | 2071 |
| SECTION 4/ 58 NOT IN DIRECTORY | | |
41. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 4, MT= 59 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=3131, MF= 4, MT= 59 | RECORD NUMBER | 2150 |
| SECTION 4/ 59 NOT IN DIRECTORY | | |
42. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 4, MT= 60 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=3131, MF= 4, MT= 60 | RECORD NUMBER | 2227 |
| SECTION 4/ 60 NOT IN DIRECTORY | | |
43. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 4, MT= 91 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=3131, MF= 4, MT= 91 | RECORD NUMBER | 2302 |
| SECTION 4/ 91 NOT IN DIRECTORY | | |
44. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 5, MT= 16 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=3131, MF= 5, MT= 16 | RECORD NUMBER | 2378 |
| SECTION 5/ 16 NOT IN DIRECTORY | | |
45. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 5, MT= 17 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=3131, MF= 5, MT= 17 | RECORD NUMBER | 2528 |
| SECTION 5/ 17 NOT IN DIRECTORY | | |
46. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 5, MT= 22 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=3131, MF= 5, MT= 22 | RECORD NUMBER | 2568 |
| SECTION 5/ 22 NOT IN DIRECTORY | | |
47. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=3131, MF= 5, MT= 28 (0): Directory (b)

ERROR(S) FOUND IN MAT=3131, MF= 5, MT= 28

SECTION 5/ 28 NOT IN DIRECTORY

RECORD NUMBER 2711

48. Missing a section in directory so your directory is messed up. This error will break everything else

MAT=3131, MF= 5, MT= 91 (0): Directory (b)

ERROR(S) FOUND IN MAT=3131, MF= 5, MT= 91

SECTION 5/ 91 NOT IN DIRECTORY

RECORD NUMBER 2874

• **psyche** Warnings:

1. Gamma width not in agreement with PSYCHE's expectations

FILE 2 / SECTION 151 / ISOTOPE MASS = 71. L = 0 / AT RESONANCE ENERGY 5.56200E+03 EV. THE GAMMA WIDTH 3.66700E+00 DEVIATES TOO MUCH FROM THE AVERAGE 3.86700E-01 (0): Gamma width

FILE 2

SECTION 151

ISOTOPE MASS = 71. L = 0

AT RESONANCE ENERGY 5.56200E+03 EV. THE GAMMA WIDTH 3.66700E+00 DEVIATES TOO MUCH FROM THE AVERAGE 3.86700E-01 (0): Gamma width

• **recent** Warnings:

1. Statistical weight of certain L values were incorrect

0: RRR goof (a)

Calculate Cross Sections from Resonance Parameters (RECENT 2015-1)

=====

Retrieval Criteria-----

MAT

File 2 Minimum Cross Section- 1.0000E-10 (Standard Option)

Reactions with No Background- Output (Resonance Contribution)

... [175 more lines]

• **fudge-4.0** Warnings:

1. Missing a channel with a particular angular momenta combination

resonances / resolved (Error # 1): missingResonanceChannel

WARNING: Missing a channel with angular momenta combination L = 0, J = 0.0 and S = 0.0 for "capture"

WARNING: Missing a channel with angular momenta combination L = 1, J = 1.0 and S = 0.0 for "capture"

WARNING: Missing a channel with angular momenta combination L = 1, J = 1.0 and S = 1.0 for "capture"

WARNING: Missing a channel with angular momenta combination L = 1, J = 2.0 and S = 1.0 for "capture"

• **fudge-4.0** Errors:

1. The spin statistical weights are off, indicating missing channels

resonances / resolved / MultiLevel_BreitWigner (Error # 0): badSpinStatisticalWeights

WARNING: The spin statistical weights for L=1 sums to 2.0, but should sum to 3.0. You have too few channels for resonance

2. Calculated and tabulated Q values disagree.

reaction label 12: n[multiplicity:'2'] + Ga70 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -9699961.873649597 eV vs -9.3054e6 eV!

3. Calculated and tabulated Q values disagree.
reaction label 13: n[multiplicity:'3'] + Ga69 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -17353611.34486389 eV vs -1.6959e7 eV!

4. Calculated and tabulated Q values disagree.
reaction label 14: n + H1 + Zn70 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -8263056.231056213 eV vs -7.8673e6 eV!

5. Calculated and tabulated Q values disagree.
reaction label 15: Ga72 + gamma (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: 6121963.310874939 eV vs 6.5212e6 eV!

6. Calculated and tabulated Q values disagree.
reaction label 16: n + He4 + Cu67 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -5644870.590927124 eV vs -5.2612e6 eV!

7. Calculated and tabulated Q values disagree.
reaction label 17: H1[multiplicity:'2'] + Cu70 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -14069231.25972748 eV vs -1.3256e7 eV!

8. Calculated and tabulated Q values disagree.
reaction label 18: H1 + Zn71-s (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -2429490.238014221 eV vs -2.0335e6 eV!

9. Calculated and tabulated Q values disagree.
reaction label 19: H2 + Zn70-s (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -6038490.130126953 eV vs -5.6428e6 eV!

10. Calculated and tabulated Q values disagree.
reaction label 20: H3 + Zn69-s (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -8999250.311264038 eV vs -8.6007e6 eV!

11. Calculated and tabulated Q values disagree.
reaction label 21: He3 + Cu69-s (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -11662419.24272156 eV vs -1.1258e7 eV!

12. Calculated and tabulated Q values disagree.
reaction label 22: He4 + Cu68-s (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: 674702.4211120605 eV vs 1.0476e6 eV!

- njoy2012 Warnings:

1. Evaluation has no unresolved resonance parameters given
unresr...calculation of unresolved resonance cross sections (0): No URR

- message from unresr---mat 3131 has no unresolved parameters
copy as is to nout
2. Evaluation has no unresolved resonance parameters given
purrr...probabalistic unresolved calculation (0): No URR
- message from purrr---mat 3131 has no unresolved parameters
copy as is to nout
3. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
groupr...compute self-shielded group-averaged cross-sections (0): GROUPR/conver (0)
- message from conver---cannot do complete particle production for mt= 16
only mf4/mf5 provided
4. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
groupr...compute self-shielded group-averaged cross-sections (1): GROUPR/conver (0)
- message from conver---cannot do complete particle production for mt= 17
only mf4/mf5 provided
5. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
groupr...compute self-shielded group-averaged cross-sections (2): GROUPR/conver (0)
- message from conver---cannot do complete particle production for mt= 22
only mf4/mf5 provided
6. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
groupr...compute self-shielded group-averaged cross-sections (3): GROUPR/conver (0)
- message from conver---cannot do complete particle production for mt= 28
only mf4/mf5 provided
7. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
groupr...compute self-shielded group-averaged cross-sections (4): GROUPR/conver (0)
- message from conver---cannot do complete particle production for mt= 91
only mf4/mf5 provided